

CLAIMS

What is claimed is:

1. A control device for controlling a display of a computer system for use with a video game comprising:
  - a coordinate control unit adapted to input information related to a vertical and a horizontal tilt of the control device;
  - a mouse control unit adapted to input computer mouse input information;
  - a game play control unit adapted to input game play information; and

10 a controller adapted to process input information from the coordinate control unit; mouse control unit and game play control unit to provide game information to the computer system.

  
- 2. The control device of claim 1, wherein the control device has a shape substantially similar to a firearm comprising:
  - 15 a central body;
  - a handgrip extending downward from a rear section of the central body;
  - a barrel extending longitudinally forward from the central body; and
  - a trigger extending downward from the central body in front of the handgrip.  
- 20 3. The control device of claim 2, wherein the coordinate control unit further comprises:
  - a y-axis sensor adapted to input information regarding a tilt of the barrel of the control

device in a vertical direction; and

an x-axis sensor adapted to input information regarding a tilt of the barrel of the control device in a horizontal direction.

5 4. The control device of claim 3, wherein the y-axis sensor further comprises:

a horizontal shaft attached to a side of the barrel that rotates as the barrel is tilted upward and downward;

a first optical disk attached to the horizontal shaft such that the optical disk rotates with the horizontal shaft; and

10 at least one optical encoder adapted to correlate rotation of the optical disk to vertical tilt of the barrel to provide information indicating a desired vertical point of view of a user in the video game.

5. The control device of claim 3, wherein the x-axis sensor further comprises:

15 a vertical shaft connected to the y-axis sensor such that the vertical shaft rotates as the barrel is tilted left and right;

a second optical encoder disk attached to the vertical shaft such that the second optical disk rotates with the vertical shaft; and

20 at least one second optical encoder adapted to correlate the rotation of the second optical disk to a horizontal tilt of the barrel to provide information indicating a desired horizontal point of view of a user in the video game.

6. The control device of claim 1, wherein the coordinate control unit further comprises:  
at least one gyroscope adapted to provide information regarding the vertical and  
horizontal tilt of the control device in order to provide information regarding a desired vertical  
5 and horizontal point of view of the user in the video game.

7. The control device of claim 1, wherein the coordinate control unit further comprises:  
at least one gyroscope adapted to provide information regarding the vertical and  
horizontal tilt of the control device in order to provide information regarding a desired vertical  
10 and horizontal position of a cursor on the display of the computer system.

8. The control device of claim 2, wherein the mouse control unit comprises:  
a mouse wheel adapted to provide information to scroll up or down on the display;  
a left mouse button adapted to provide information regarding selections of a user; and  
15 a right mouse button adapted to provide information regarding other selections of a user.

9. The control device of claim 8, wherein the mouse wheel, the left mouse button and the  
right mouse button are mounted on a side of the central body of the control device such that  
positioning a finger of a user proximate to the trigger operates the mouse wheel, left mouse  
20 button and right mouse button.

10. The control device of claim 2, wherein the game play control unit comprises:  
a directional controller adapted to input information regarding longitudinal and lateral  
movement in space;

5 a plurality of buttons adapted to provide information regarding a plurality of actions  
performed on the display, the plurality of actions including running, crouching, jumping and  
special actions; and

a coordinate activation button adapted to enable input of information from the coordinate  
control unit while depressed.

10 11. The control device of claim 10, wherein the plurality of buttons are positioned on the  
hand grip of the control device such that the plurality of buttons are operable by fingers of the  
user gripping the hand grip.

12. The control device of claim 11, further comprising:

15 a fore grip, extending down from the barrel of the weapon, wherein the directional  
controller is positioned on the fore grip and is operable by a thumb and fingers of a second hand  
of the user gripping the fore grip

20 13. The control device of claim 11, wherein the directional controller is positioned on the  
barrel of the control device.

14. The control device of claim 12, wherein the game play control unit further comprises a shoot button mounted on the trigger of the control device.

15. The control device of claim 2, further comprising a removable shoulder stock 5 extending behind the central body of the control device and adapted to steady the control device against a shoulder of the user.

16. The control device of claim 1, further comprising a display unit mounted on the control device to provide additional image information to a user of the control device.

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17. The control device of claim 1, further comprising a feedback unit adapted to provide tactile feedback to a user of the control device.

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18. A method for controlling a display of a computer system comprising:  
receiving information from a coordinate control unit related to a vertical and a horizontal tilt of a control device;  
receiving computer mouse input information from a mouse control unit;  
receiving information from a game play control unit; and  
providing game information based on information received from the coordinate control 20 unit, mouse control unit and game play control unit.

19. The method of claim 18, wherein the control unit has a shape substantially similar to a firearm comprising:

a central body;

a handgrip extending downward from a rear section of the central body;

5 a barrel extending longitudinally forward from the central body; and

a trigger extending downward from the central body in front of the handgrip.

20. The method of claim 19, wherein the step of receiving information related to the vertical and horizontal tilt of the control device comprises:

10 receiving information regarding a tilt of the barrel relative to a centered vertical position of the control device from a y-axis sensor; and

receiving information regarding a tilt of the barrel relative to a centered horizontal position from an x-axis sensor.

15 21. The method of claim 20, wherein the step of receiving information from the y-axis sensor further comprises:

attaching a horizontal shaft to a side of the barrel that rotates as the barrel is tilted upward and downward;

connecting a first optical disk attached to the horizontal shaft such that the optical disk

20 rotates with the horizontal shaft; and

providing at least one optical encoder adapted to correlate rotation of the optical disk to

vertical tilt of the barrel to provide information indicating a desired vertical point of view of a user in the video game.

22. The method of claim 21, wherein the step of receiving information from the x-  
5 axis sensor further comprises:

connecting a vertical shaft to the y-axis sensor such that the vertical shaft rotates as the barrel is tilted left and right;

connecting a second optical encoder disk attached to the vertical shaft such that the second optical disk rotates with the vertical shaft; and

10 providing at least one second optical encoder adapted to correlate the rotation of the second optical disk to a horizontal tilt of the barrel to provide information indicating a desired horizontal point of view of a user in the video game.

23. The method of claim 18, wherein the step receiving information from the coordinate  
15 control unit further comprises:

attaching at least one gyroscope to the control device; and  
receiving information regarding the vertical and horizontal tilt of the control device from the gyroscope in order to provide information regarding the desired vertical and horizontal point of view of a user in the video game.

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24. The method of claim 19, wherein the step of receiving mouse control information

comprises:

- receiving information related to scrolling up and down on the display;
- receiving information regarding selections of a user from a left mouse button; and
- receiving information regarding other selections of a user from a right mouse button.

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25. The method of claim 24, wherein the mouse wheel, the left mouse button and the right mouse button are mounted on a side of the central body of the control device such that positioning a finger of a user proximate to the trigger operates the mouse wheel, left mouse button and right mouse button.

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26. The method of claim 18, wherein the step of receiving information from a game play control unit comprises:

receiving input information regarding longitudinal and lateral movement of a character on the display in space from a direction control unit;

15 receiving information regarding a plurality of actions performed by the character on the display, from a plurality of controls; and

receiving activation information from a coordinate activation button to enable input of information from the coordinate control unit.

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27. The method of claim 26, wherein the controls are positioned on the hand grip of the control device such that the controls are operable by a thumb of the user gripping the handgrip.

28. The method of claim 27, wherein the direction control unit is positioned on a fore grip, extending down from the barrel of the weapon and is operable by a thumb and fingers of a second hand of the user gripping the fore grip.

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29. The method of claim 28, wherein the plurality of controls includes a shoot button mounted on the trigger of the control device.

10 30. The method of claim 19, wherein the control device further comprises a removable shoulder stock extending behind the central body of the control device and adapted to steady the control device against a shoulder of the user.

15 31. The method of claim 18, further comprising receiving additional image information to be displayed to a user via a display unit.

32. The method of claim 18, further comprising receiving feedback information for providing tactile feedback to a user via a feedback unit.

20 33. A control device for controlling a display of a computer system for use with a video game comprising:

a coordinate control unit adapted to input information related to a vertical and a

horizontal tilt of the control;  
a mouse control unit adapted to input computer mouse input information;  
a game play control unit adapted to input game play information; and  
a controller adapted to process input information from the coordinate control unit, mouse  
5 control unit and game play control unit to provide game information to the computer system.

34. The control device of claim 33, wherein the control device is substantially u-shaped comprising:

10 a first open end;  
a second open end; and  
a connected end connecting the first open end and the second open end.

35. The control device of claim 34, wherein the coordinate control unit further comprises:

15 a y-axis sensor adapted to input information regarding a tilt of the control device in a vertical direction; and  
an x-axis sensor adapted to input information regarding a tilt of the control device in a horizontal direction.

20 36. The control device of claim 35, wherein the y-axis sensor further comprises:  
a horizontal shaft attached to a side of the control device that rotates as the control device

is tilted upward and downward;

a first optical disk attached to the horizontal shaft such that the optical disk rotates with the horizontal shaft; and

at least one optical encoder adapted to correlate rotation of the optical disk to vertical tilt

5 of the control device to provide information indicating a desired vertical point of view of a user in the video game.

37. The control device of claim 36, wherein the x-axis sensor further comprises:

a vertical shaft connected to the y-axis sensor such that the vertical shaft rotates as the

10 control device is tilted left and right;

a second optical encoder disk attached to the vertical shaft such that the second optical disk rotates with the vertical shaft; and

at least one second optical encoder adapted to correlate the rotation of the second optical

disk to a horizontal tilt of the control device to provide information indicating a desired

15 horizontal point of view of a user in the video game.

38. The control device of claim 35, wherein the y-axis sensor and the x-axis sensor are positioned in a substantially u-shaped base such that the y-axis sensor detects rotation of a connecting member extending vertically from the base to the control device forward and

20 backward to determine the vertical tilt of the control device and the x-axis sensor detects rotation of the connecting member left and right to determine the horizontal tilt of the control device.

39. The control device of claim 33, wherein the coordinate control unit further comprises:

5 at least one gyroscope adapted to provide information regarding the vertical and horizontal tilt of the control device in order to provide information regarding a desired vertical and horizontal point of view of a user in the video game.

40. The control device of claim 34, wherein the mouse control unit comprises:

10 a mouse wheel adapted to provide information to scroll up or down on the display; a left mouse button adapted to provide information regarding selections of a user; and a right mouse button adapted to provide information regarding other selections of a user.

41. The control device of claim 40, wherein the mouse wheel, the left mouse button and the right mouse button are mounted in a substantially centered position on a top surface of the 15 connected end of the control device.

42. The control device of claim 40, wherein the mouse wheel, the left mouse button and the right mouse button are mounted in an off centered position on a top center of the connected end of the control device.

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43. The control device of claim 34, wherein the game play control unit comprises:

a directional controller adapted to input information regarding longitudinal and lateral movement in space positioned on the left side of the top surface of the connected end such that the directional controller is easily manipulated by the left thumb of the user.

5 a plurality of buttons adapted to provide information regarding a plurality of actions performed on the display, the plurality of actions including running, crouching, jumping and selecting weapons and positioned on the right side of the top surface of the control device such that the plurality of buttons are easily manipulated by the right thumb of the user; and

10 a coordinate activation button adapted to enable input of information from the coordinate control unit while depressed and positioned on a front surface of the connected end of the control device.

44. The control device of claim 33, further comprising a display unit mounted on the control device to provide additional image information to a user of the control device.

15 45. The control device of claim 33, further comprising a feedback unit adapted to provide tactile feedback to a user of the control device.